

**Fax transmission from:**

U.S. Naval Research Laboratory
Associate Counsel Intellectual Property, Code 1008.2
4555 Overlook Avenue, SW
Washington, DC 20375-5325

BEST AVAILABLE COPY

From: Jane Marciniak
Phone: (202) 767-3427 404-1551
Fax: (202) 404-7380

To: Joseph Nguyen
PATENT EXAMINER 2815
Fax: 703-308-7382

Date: 1/9/02

Cover Sheet + 7 Pages

Message: Navy Case No. 79,812

..... U.S. Patent Application Serial No. 09/614,682

..... Enclosed: Fee Transmitted; and

..... 2. Amendment

.....

.....

.....

.....

.....

.....

.....

The information contained in this facsimile may be client confidential, and may also be attorney privileged. The information is intended only for the use of the individual or entity to whom it is addressed. If you are not the intended recipient, you are hereby notified that any use, distribution, or copying of this transmission is prohibited. If you have received this facsimile in error, please notify us immediately by telephone for instructions. Thank you.

FAX COPY RECEIVED

JAN 9 2002

TECHNOLOGY CENTER 2800

PTO/5817 (10-01)

Approved for use through 10/31/2002. OMB 0651-0032

U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

FEE TRANSMITTAL for FY 2002

Patent fees are subject to annual revision.

TOTAL AMOUNT OF PAYMENT

(\$ 920

Complete if Known

Application Number 09/614,682
 Filing Date July 12, 2000
 First Named Inventor Summers et al.
 Examiner Name Nguyen, J.
 Group Art Unit 2815
 Attorney Docket No. 79,812

METHOD OF PAYMENT		FEE CALCULATION (continued)																																																																																																																													
1. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge indicated fees and credit any overpayments to: Deposit Account Number: 50-0281 Deposit Account Name: Naval Research Laboratory <input checked="" type="checkbox"/> Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17 <input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27		3. ADDITIONAL FEES <table border="1"> <thead> <tr> <th>Large Entity Fee Code (\$)</th> <th>Small Entity Fee Code (\$)</th> <th>Fee Description</th> <th>Fee Paid</th> </tr> </thead> <tbody> <tr><td>105 130 205 65</td><td></td><td>Surcharge - late filing fee or oath</td><td></td></tr> <tr><td>127 50 227 25</td><td></td><td>Surcharge - late provisional filing fee or cover sheet</td><td></td></tr> <tr><td>139 120 139 130</td><td></td><td>Non-English specification</td><td></td></tr> <tr><td>147 2,520 147 2,520</td><td></td><td>For filing a request for ex parte examination</td><td></td></tr> <tr><td>112 920 112 920</td><td></td><td>Requesting publication of SIR prior to Examiner action</td><td></td></tr> <tr><td>113 1,840 113 1,840</td><td></td><td>Requesting publication of SIR after Examiner action</td><td></td></tr> <tr><td>115 110 215 55</td><td></td><td>Extension for reply within first month</td><td></td></tr> <tr><td>116 400 216 200</td><td></td><td>Extension for reply within second month</td><td></td></tr> <tr><td>117 920 217 460</td><td></td><td>Extension for reply within third month</td><td>920</td></tr> <tr><td>118 1,440 218 720</td><td></td><td>Extension for reply within fourth month</td><td></td></tr> <tr><td>128 1,960 228 980</td><td></td><td>Extension for reply within fifth month</td><td></td></tr> <tr><td>119 320 219 160</td><td></td><td>Notice of Appeal</td><td></td></tr> <tr><td>120 320 220 160</td><td></td><td>Filing a brief in support of an appeal</td><td></td></tr> <tr><td>121 260 221 140</td><td></td><td>Request for oral hearing</td><td></td></tr> <tr><td>138 1,510 138 1,510</td><td></td><td>Petition to institute a public use proceeding</td><td></td></tr> <tr><td>140 110 240 55</td><td></td><td>Petition to revive - unavoidable</td><td></td></tr> <tr><td>141 1,260 241 640</td><td></td><td>Petition to revive - unintentional</td><td></td></tr> <tr><td>142 1,280 242 640</td><td></td><td>Utility issue fee (or response)</td><td></td></tr> <tr><td>143 460 243 230</td><td></td><td>Design issue fee</td><td></td></tr> <tr><td>144 620 244 310</td><td></td><td>Plant issue fee</td><td></td></tr> <tr><td>122 130 122 130</td><td></td><td>Petitions to the Commissioner</td><td></td></tr> <tr><td>123 50 123 50</td><td></td><td>Processing fee under 37 CFR 1.17(c)</td><td></td></tr> <tr><td>126 150 126 180</td><td></td><td>Submission of Information Disclosure Stmt</td><td></td></tr> <tr><td>581 40 581 40</td><td></td><td>Recording each patent assignment per property (times number of properties)</td><td></td></tr> <tr><td>146 740 246 370</td><td></td><td>Filing a submission after final rejection (37 CFR § 1.129(a))</td><td></td></tr> <tr><td>149 740 249 370</td><td></td><td>For each additional invention to be examined (37 CFR § 1.129(b))</td><td></td></tr> <tr><td>175 740 279 370</td><td></td><td>Request for Continued Examination (RCE)</td><td></td></tr> <tr><td>169 900 169 900</td><td></td><td>Request for expedited examination of a design application</td><td></td></tr> <tr><td colspan="2">Other fee (specify):</td><td></td><td></td></tr> <tr> <td colspan="2">SUBTOTAL (1) (\$ 0</td> <td colspan="2">SUBTOTAL (3) (\$ 920</td> </tr> </tbody> </table>		Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid	105 130 205 65		Surcharge - late filing fee or oath		127 50 227 25		Surcharge - late provisional filing fee or cover sheet		139 120 139 130		Non-English specification		147 2,520 147 2,520		For filing a request for ex parte examination		112 920 112 920		Requesting publication of SIR prior to Examiner action		113 1,840 113 1,840		Requesting publication of SIR after Examiner action		115 110 215 55		Extension for reply within first month		116 400 216 200		Extension for reply within second month		117 920 217 460		Extension for reply within third month	920	118 1,440 218 720		Extension for reply within fourth month		128 1,960 228 980		Extension for reply within fifth month		119 320 219 160		Notice of Appeal		120 320 220 160		Filing a brief in support of an appeal		121 260 221 140		Request for oral hearing		138 1,510 138 1,510		Petition to institute a public use proceeding		140 110 240 55		Petition to revive - unavoidable		141 1,260 241 640		Petition to revive - unintentional		142 1,280 242 640		Utility issue fee (or response)		143 460 243 230		Design issue fee		144 620 244 310		Plant issue fee		122 130 122 130		Petitions to the Commissioner		123 50 123 50		Processing fee under 37 CFR 1.17(c)		126 150 126 180		Submission of Information Disclosure Stmt		581 40 581 40		Recording each patent assignment per property (times number of properties)		146 740 246 370		Filing a submission after final rejection (37 CFR § 1.129(a))		149 740 249 370		For each additional invention to be examined (37 CFR § 1.129(b))		175 740 279 370		Request for Continued Examination (RCE)		169 900 169 900		Request for expedited examination of a design application		Other fee (specify):				SUBTOTAL (1) (\$ 0		SUBTOTAL (3) (\$ 920	
Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid																																																																																																																												
105 130 205 65		Surcharge - late filing fee or oath																																																																																																																													
127 50 227 25		Surcharge - late provisional filing fee or cover sheet																																																																																																																													
139 120 139 130		Non-English specification																																																																																																																													
147 2,520 147 2,520		For filing a request for ex parte examination																																																																																																																													
112 920 112 920		Requesting publication of SIR prior to Examiner action																																																																																																																													
113 1,840 113 1,840		Requesting publication of SIR after Examiner action																																																																																																																													
115 110 215 55		Extension for reply within first month																																																																																																																													
116 400 216 200		Extension for reply within second month																																																																																																																													
117 920 217 460		Extension for reply within third month	920																																																																																																																												
118 1,440 218 720		Extension for reply within fourth month																																																																																																																													
128 1,960 228 980		Extension for reply within fifth month																																																																																																																													
119 320 219 160		Notice of Appeal																																																																																																																													
120 320 220 160		Filing a brief in support of an appeal																																																																																																																													
121 260 221 140		Request for oral hearing																																																																																																																													
138 1,510 138 1,510		Petition to institute a public use proceeding																																																																																																																													
140 110 240 55		Petition to revive - unavoidable																																																																																																																													
141 1,260 241 640		Petition to revive - unintentional																																																																																																																													
142 1,280 242 640		Utility issue fee (or response)																																																																																																																													
143 460 243 230		Design issue fee																																																																																																																													
144 620 244 310		Plant issue fee																																																																																																																													
122 130 122 130		Petitions to the Commissioner																																																																																																																													
123 50 123 50		Processing fee under 37 CFR 1.17(c)																																																																																																																													
126 150 126 180		Submission of Information Disclosure Stmt																																																																																																																													
581 40 581 40		Recording each patent assignment per property (times number of properties)																																																																																																																													
146 740 246 370		Filing a submission after final rejection (37 CFR § 1.129(a))																																																																																																																													
149 740 249 370		For each additional invention to be examined (37 CFR § 1.129(b))																																																																																																																													
175 740 279 370		Request for Continued Examination (RCE)																																																																																																																													
169 900 169 900		Request for expedited examination of a design application																																																																																																																													
Other fee (specify):																																																																																																																															
SUBTOTAL (1) (\$ 0		SUBTOTAL (3) (\$ 920																																																																																																																													
2. EXTRA CLAIM FEES <table border="1"> <thead> <tr> <th>Large Entity Fee Code (\$)</th> <th>Small Entity Fee Code (\$)</th> <th>Fee Description</th> <th>Fee Paid</th> </tr> </thead> <tbody> <tr><td>103 18 203 9</td><td></td><td>Claims in excess of 20</td><td></td></tr> <tr><td>102 84 202 42</td><td></td><td>Independent claims in excess of 3</td><td></td></tr> <tr><td>104 280 204 140</td><td></td><td>Multiple dependent claim, if not paid</td><td></td></tr> <tr><td>109 84 209 42</td><td></td><td>Reissue independent claims over original patent</td><td></td></tr> <tr><td>110 16 210 8</td><td></td><td>Reissue claims in excess of 20 and over original patent</td><td></td></tr> <tr> <td colspan="2">SUBTOTAL (2) (\$ 0</td> <td colspan="2"></td> </tr> </tbody> </table>		Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid	103 18 203 9		Claims in excess of 20		102 84 202 42		Independent claims in excess of 3		104 280 204 140		Multiple dependent claim, if not paid		109 84 209 42		Reissue independent claims over original patent		110 16 210 8		Reissue claims in excess of 20 and over original patent		SUBTOTAL (2) (\$ 0																																																																																																					
Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid																																																																																																																												
103 18 203 9		Claims in excess of 20																																																																																																																													
102 84 202 42		Independent claims in excess of 3																																																																																																																													
104 280 204 140		Multiple dependent claim, if not paid																																																																																																																													
109 84 209 42		Reissue independent claims over original patent																																																																																																																													
110 16 210 8		Reissue claims in excess of 20 and over original patent																																																																																																																													
SUBTOTAL (2) (\$ 0																																																																																																																															

SUBMITTED BY		Complete if applicable	
Name (Print/Type)	Jane Barrow Marciniszyn	Registration No. (Attorney/Agent)	34,217
Signature	<i>Jane Barrow Marciniszyn</i>	Telephone	202-404-1551
		Date	1/9/02

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2036.

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

FAX COPY RECEIVED

JAN 9 2002

TECHNOLOGY CENTER 2800

#6/AC3
F.BELL
1-15-02

PATENT APPLICATION
Navy Case No. 79,812

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Summers et al.

Serial No.: 09/614,682

Filed: July 12, 2000

For: CMOS DEVICES HARDENED AGAINST TOTAL DOSE RADIATION

Examiner: Nguyen, J.

Group Art Unit: 2815

January 9, 2002

Honorable Assistant Commissioner of Patents
Washington, D.C. 20231**AMENDMENT**

Dear Sir:

In response to the Office Action mailed on July 10, 2001, please amend the above-identified application as follows:

In the claims:

1. (Amended) A bulk CMOS or NMOS device having two or more FETs and having a field oxide region separating each FET which are disposed on a substrate, the device being resistant to total dose radiation failures, the device further comprising a negative voltage source, for applying a steady negative back bias to said substrate to increase the threshold voltage in a NMOS field oxide region to mitigate leakage currents in said device, thereby mitigating total dose radiation effects, and wherein said field oxide region separates each FET.

2. (Amended) The device of claim 1, wherein said back bias is less than the breakdown voltage of drain-substrate and source-substrate junctions.

7. (Amended) A method for operating a bulk CMOS or NMOS device to resist total dose radiation effects, said CMOS or NMOS device having two or more FETs with a field oxide region separating each FET disposed on a substrate, comprising the steps of:

selecting a maximum ionizing radiation dose for operation of said bulk CMOS or NMOS device; and

determining and applying a negative back bias to said substrate of NMOS

FAX COPY RECEIVED

JAN 9 2002

TECHNOLOGY CENTER 2800